

## CLAIMS:

1. A device for producing images of an object (5) that is subject to a cyclic spontaneous movement, comprising
  - a) an X-ray unit (1) for producing a series of two-dimensional projected pictures of the object (5);
  - 5 b) a measuring device (4, 7) for determining a parameter characteristic of the spontaneous movement of the object (5);
  - c) a data processing device (10) that is coupled to the X-ray unit (1) and the measuring device (4, 7) and that is designed to drive the X-ray unit (1) as a function of the particular value of the characteristic parameter in such a way that, during a predetermined 10 movement phase to be displayed, pictures are taken of the object (5) with a higher X-ray exposure rate and/or picture-taking rate than during the other movement phases.
2. A device as claimed in claim 1, characterized in that the data processing device (10) is designed to adjust the picture-taking rate, the X-ray pulse duration, the tube 15 current and/or the tube voltage of the X-ray unit (1).
3. A device as claimed in claim 1, characterized in that the object is a heart (5).
4. A device for controlling the injection rate of a contrast agent in a vascular 20 system, comprising
  - a) an injection pump (8) for injecting the contrast agent at a controllable injection rate;
  - b) a measuring device (4, 7) for determining the parameter characteristic of the flowrate in the vascular system;
  - 25 c) a control unit (10) that is coupled to the injection pump (8) and the measuring device (4, 7) and is designed to drive the injection pump (8) as a function of the particular value of the characteristic parameter in such a way that the contrast agent follows a predetermined concentration pattern in the vascular system.

5. A device as claimed in claim 4, characterized in that the predetermined concentration pattern produces an approximately constant contrast display during the contrast-agent injection in the case of an imaging picture of the vascular system.

5 6. A device as claimed in claim 1 or 4, characterized in that the measuring device is an electrocardiograph apparatus (4, 7).

7. A device for producing an image of the heart (5) comprising a device as claimed in claim 1 for producing an image of the heart (5) and also a device as claimed in 10 claim 4 for controlling the injection rate of a contrast agent into the vascular system of the heart (5).

8. A method of producing an image of an object (5) that is subject to cyclic spontaneous movement, comprising the steps of  
15 a) producing a series of projected X-ray pictures of the object (5);  
b) measuring a parameter characteristic of the spontaneous movement of the object;  
c) controlling the X-ray exposure rate and/or the picture-taking rate as a function of the particular value of the characteristic parameter in such a way that the X-ray exposure 20 rate and/or the picture-taking rate is higher during a predetermined movement phase, to be displayed of the object than during the other movement phases of the object.

9. A method of controlling the injection rate at which a contrast agent is injected into a vascular system, comprising the steps of  
25 a) measuring the current flowrate in the vascular system;  
b) injecting the contrast agent as a function of the measured flowrate at an injection rate that is such that the contrast agent follows a predetermined concentration pattern in the vascular system.

30 10. A method of producing an image of the heart (5) comprising the injection of a contrast agent in a method as claimed in claim 9 and also the production of an image of the heart during the contrast-agent injection in a method as claimed in claim 8.